DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-002771
Date Inspected: 31-May-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name: Ye Yong Jun and Shazhi

Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**CWI Present:**	☑ Yes	☐ No	
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
				Approved WPS:	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG and SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.

The QA Inspector has randomly observed the following activities on these Bays mentioned below;

Bay 2: 77 and 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed Tower Mock-up, and rolling machine was idle. Whereas on cutting machine, there was no Caltrans job on the table. On horizontal milling machine/ beveling, eight 60mm thick X 400mm width X 1100 long plates marked P235, which appear to be skin stiffener plate was seen in progress while one 75mm thick tower diaphragm plate marked SA196 seen complete. Drilling of 36-24mm diameter bolt holes on 28mm thick connector plate was seen on going.

Bay 3: OBG side/bottom/edge panel:
The QA Inspector randomly observed ZPMC welder Li Xuehua ID number 058174, utilizing the FCAW process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H in the 3G (Vertical Groove) Position with ZPMC WPS WPS-B-T-2233-B-U2-F, to weld groove splice butt joint on W18 X 46 flange to make WT rib stiffener for side panel SP180-001-002. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters.

The QA Inspector randomly observed ZPMC welder operators Li Shuliang ID Number 048801 and, Liu Zihong

ID Number 062447, utilizing the Flux Cored Arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with a gantry mounted welding apparatus and ZPMC Weld Procedure Specification (WPS) WPS-B-T-2123-3, to weld open-rib stiffeners to side panel SP412-001-003 & 4 and SP412-001-007 & 8. The QA Inspector randomly observed ZPMC CWI Wu Ming Cai monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 300 amps, 30.2 volts for welder ID# 048801 and 308 amps, 30.0 volts for ID# 062447. Travel speed for all welds was randomly observed at 446 millimeters (mm) per minute. The weld parameters appeared to comply with contract requirements.

Tack welding/fit up of open 2-rib stiffener to edge panel EP041-001-001~004 and EP055-001-001~004 and WT rib stiffener to side panel SP301-011/012, SP301-001-005/006, SP301-001-001/002 and six rib WT stiffener SP300-001-012 using electrode THJ506Fe-1 were observed in progress. Other welding related activities include cutting and grinding of 28mm thick open rib stiffeners and grinding off paint coating on W18X46 weld area for WT rib stiffeners and plate panels.

Bay 4: Tower Diaphragm
The QA Inspector randomly observed ZPMC welder Gu Cai Hong ID Number 046830, utilizing the Submerged Arc Welding (SAW) Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass in weld joint SSD1-SA261-1B(2B) on Tower Diaphragm Top Plate Sub-Assembly. The QA Inspector randomly observed ZPMC CWI Ye Yong Jun monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 647 amps, 30.6 volts with a travel speed of 500 mm per minute. The weld parameters appeared to comply with contract requirements.

This QA randomly observed heat straightening of bottom panel BP032(A)-001 due to welding distortion. Oxy-acetylene was used and less than 650 degree C thermal heat input was implemented following procedure HSR1(B)-1070. Bending of heavy plates P665(S)-1 4/21(A) and P1256(S)-1 4/22(C) for diaphragm ring using oxy-acetylene with thermal heat input of less than 650 degree C and following procedure HSR1(T)-2044 and HSR1(T)-2045 respectively.

QA Inspector J.Lizardo observed ZPMC qualified welder Mr. Han Xiaofeng ID #054467 welding repair at plate splice butt joint WSD1-SA318A/B-3A/3B due to UT rejectable indication. Mr. Han was observed welding weld repair per welding report T-WR055 in the 1G (flat) position utilizing a Shielded Metal Arc Welding (SMAW) process with a 4.0mm diameter electrode, filler metal brand Excalibur E9018M H4R. QA Inspector Lizardo observed the ZPMC QC CWI Inspector CWI Ye Yong Jun verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector observed preheat and welding parameters measured by the QC CWI Inspector CWI Ye Yong Jun to be: preheat temperature of >180°C but <230°C and welding parameters amps of 184, and volts of 24.0. Welding parameters observed by QA Inspector Lizardo appear to be in general compliance with the approved WPS-485-SMAW 1G(1F) Repair. The only concern this QA had, there was no MT onto the excavated area. This QA asked the QC why there was no MT prior welding, but ZPMC QC said they only do it upon request.

Other related welding activity observed was tack welding/fit up and pre-assembly of tower diaphragm rings ESD1-SA-9B and ESD1-SA287.

Bay 7: OBG - Floor Beam Sub Assembly:

The QA Inspector randomly observed ZPMC welder Huang Xin Lan ID Number 044780, utilizing the Submerged Arc Welding (SAW) Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-2221-B-L2c-S-1, to weld the cover pass in plate splice butt joint FB032-001-078/079 floor beam. The QA Inspector randomly observed ZPMC CWI Huang Wen Pang monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 500 amps, 30.0 volts with a travel speed of 423 mm per minute. The weld parameters appeared to comply with contract requirements.

QA Inspector J. Lizardo randomly observed ZPMC qualified welder Zhang Qingquan ID #044774 groove welding fill pass on floor plate tee joint using WPS-B-T-2232-Tc-U4b-F. Mr. Zhang was observed welding in the 2G (horizontal) position utilizing a flux corded arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand E71T-1, class Supercored 71H, semi automatic at floor beam FB011-004-043. QA Inspector Lizardo observed the ZPMC QC CWI Inspector Huang Wen Pang verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS).

FCAW fillet welding (2F) was also observed on flange to web plate of floor beam sub-assemblies FB016-012-004 and FB016-047. Two ZPMC welders working on these were identified as Zhang Liang ID# 067036 and Chen Chuanzong ID# 044824. ZPMC CWI Hu Wei Qing was noted monitoring the parameters. Tack welding/fit-up was continuing on stiffener to web plate of floor beam FB016-007-003 and FB016-007-011 using electrode TL-508. Grinding/back gouging of plate splice butt joint after welding one side on floor beam FB031-001, FB027-002 and FB040-001 was also observed.

Bay 8: Tower Diaphragms
The QA Inspector randomly observed ZPMC welder Xie Chun Fu ID Number 045236 and Xiao Wen Yuan ID number 058482, utilizing the FCAW Process in the 3G (Horizontal Groove) position with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld bent heavy plate splice butt joint on tower diaphragm rings WSD1-SA226-4B and SSD1-270-12A respectively. The QA Inspector randomly observed ZPMC CWI Shazhi monitoring weld parameters. The weld parameters appeared to comply with contract requirements.

This QA Inspector randomly observed ZPMC welder Yu Jianguo ID number 048433, using FCAW process in the 1G position to weld PJP on corner joint of flange to web plate of longitudinal diaphragm LD001-002-012. The QA Inspector randomly observed ZPMC QC monitoring the welding parameters using WPS-B-T-2232-Tc-U4b-F-1 as reference. Also noted was fillet welding on stiffeners to web plate of longitudinal diaphragm LD019-002-001 using FCAW.

WELDING INSPECTION REPORT

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Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer